IN THE SPECIFICATION:

Please amend paragraph **[0003]** as follows:

[0003] State of the Art: Fire suppression systems may be employed in various situations and locations in an effort to quickly extinguish the undesirable outbreak of a fire and thereby prevent, or at least minimize, the damage caused by such a fire including damage to a building, various types of equipment, as well as injury or loss of human life. A conventional fire suppression system or apparatus may conventionally include a distribution apparatus, such as one or more nozzles, ~~which deploy~~ that deploys a fire-suppressing substance upon actuation of the system. Actuation of the system may be accomplished through means of a fire or smoke detection apparatus ~~which~~ that is operatively coupled to the suppression system, through the triggering of a fire alarm, or through manual deployment. Various types of fire-suppressing substances or compositions may be utilized depending, for example, on where the fire suppression system or apparatus is being employed, how large of an area is to be serviced by the fire suppression system, and what type of fire is expected to be encountered and suppressed by the system.

Please amend paragraph **[0012]** as follows:

[0012] The above-referenced Kotliar patent generally discloses a system ~~which~~ that includes a hypoxic generator configured to lower the oxygen content of the air contained within a room or other generally enclosed space to a level of approximately 12% to 17% oxygen. One of the embodiments disclosed by Kotliar includes a compressor having an inlet configured to receive a volume of ambient air from the room or enclosure. The compressed air is passed through a chiller or cooler and then through one or more molecular sieve beds. The molecular sieve bed may include a material containing zeolites ~~which allow~~ that allows oxygen to pass through while adsorbing other gases. The oxygen ~~which~~ that passes through the molecular sieve bed is discharged to a location external from the room or enclosure being protected. The molecular sieve bed is then depressurized such that the gases captured thereby are released back into the room as an oxygen-depleted gas.

Please amend paragraph **[0014]** as follows:

[0014] In view of the shortcomings in the art, it would be advantageous to provide a method, apparatus and system for suppressing fires ~~which~~ that provide effective and efficient suppression of a fire within a given location while utilizing a suppressant ~~which~~ that is not ozone-depleting yet is fit for use in rooms that are intended for human occupation or ~~which~~ that house sensitive components and equipment. It would further be advantageous to provide such a method, apparatus and system ~~which~~ that may be adapted for use in numerous locations and in a variety of applications without the need to utilize bulky and expensive storage equipment such as that associated with the storage of compressed gas or other liquid suppressants.

Please amend paragraph **[0023]** as follows:

[0023] FIG. 4 is a plot of temperature vs. ~~percent of~~ percent oxygen removed for specified exemplary embodiments of an oxygen-getting device;

Please amend paragraph **[0028]** as follows:

[0028] Referring to FIG. 1, a fire suppression apparatus 100 may include a housing 102 formed of a high-temperature-resistant material such as, for example, steel. A first set of openings 104 and a second set of openings 106 are formed within the housing 102. A flow path 108 is defined between the first and second sets of openings 104 and 106, respectively, providing substantial fluid communication therebetween. A mounting structure 109, such as, for example, a flange, may be coupled to or formed with the housing 102 such that the fire suppression apparatus 100 may be fixedly mounted to a structure within a selected environment.

Please amend paragraph **[0034]** as follows:

[0034] Referring now briefly to FIG. 2, a cross-sectional view of the gas-generating device 110 is shown in accordance with an embodiment of the present invention. The gas-generating device 110 includes a housing structure 130 containing a volume of

propellant 114 therein. An ignition device 132 is located and configured to ignite the propellant 114 upon the occurrence of a particular event. The ignition device 132 may include, for example, a squib, a semiconductor bridge (SCB), or a wire configured to be heated to incandescence. In one embodiment, the ignition device 132 may be configured to directly ignite the propellant 114 without the aid of an igniting composition. In another embodiment, the ignition device 132 may be in contact with an igniting composition ~~134~~ 134, which provides sufficient heat for the ignition of the ~~propellant.~~ propellant 114.

Please amend paragraph **[0037]** as follows:

[0037] Upon ignition of the propellant 114, a gas is generated ~~which,~~ that, in one embodiment, may include an inert gas suitable for introduction into a human-occupied space or for an environment ~~which~~ that houses sensitive electronic equipment. For example, in one embodiment, the propellant 114 may include a composition ~~which~~ that is configured to produce nitrogen gas, such as N_2, upon combustion thereof. In another embodiment, the propellant 114 may include a composition ~~which~~ that is configured to produce ~~H_20~~ H_2O (water vapor), CO_2 (carbon dioxide) gases or various mixtures of such exemplary gases upon the combustion thereof. Various propellant compositions are contemplated as being used with the present invention. However, depending on various factors such as the intended normal use of the environment being protected by the fire suppression apparatus 100, it may be desirable to utilize a composition ~~which~~ that produces a gas (or gas mixture) ~~which~~ that is free of ozone-depleting gases (e.g., halogenated fluorocarbons) and/or global warming gases (e.g., carbon dioxide) while still being effective at lowering the oxygen content of air contained within a generally enclosed space.

Please amend paragraph **[0040]** as follows:

[0040] The gas-generating device 110 may further include a filter 136 such as, for example, a screen mesh or an amount of steel shot disposed within the housing 130. The ~~filter~~ filter 136 may be used to prevent slag or molten material produced during combustion of the

propellant 114 from leaving the housing 130. The prevention of slag or other solids from leaving the gas-generating device 110 may be desirable to prevent the blocking or clogging of the nozzle 116, to prevent damage to other components located within the flow path 108 (FIG. 1) and to simply prevent damage to equipment or injury to individuals ~~which~~ that might otherwise result if such high-temperature materials were allowed to be discharged back into the environment being serviced by the fire suppression apparatus 100.

Please amend paragraph **[0042]** as follows:

[0042] The ignition and subsequent combustion of the propellant 114 results in the generation of a gas ~~which~~ that flows through the nozzle 116 of the gas-generating device 110 as indicated by directional arrow 140. The nozzle 116 is configured to substantially control the flow of the generated gas including the velocity of the gas exiting the nozzle 116 as it enters into the flow path 108. In one embodiment, the nozzle 116 is configured such that gas exits the nozzle 116 at sonic or supersonic velocities. The high-velocity gas flow exiting the ~~nozzle,~~ nozzle 116, combined with the geometric area ratios and the location of the nozzle 116 within the flow path 108 relative to the first set of openings 104, causes ambient air (*i.e.*, air external to the fire suppression apparatus 100) to be drawn in through the first set of openings 104. In other words, the high-velocity production of gas effects an aspiration or eduction of ambient air located outside the fire suppression apparatus 100 through the first set of openings 104 and into the flow path 108 as indicated at 108A.

Please amend paragraph **[0044]** as follows:

[0044] In a further exemplary embodiment, the oxygen-getting device 120 may be at least partially formed of a material comprising nickel ~~which~~ that may adsorb approximately 0.27 ~~lbs oxygen/lb~~ lbs. oxygen/lb. mat'l. The reaction of the ambient air with the nickel will result in the production of NiO within the oxygen-getting device 120. In yet another exemplary embodiment, the oxygen-getting device 120 may be at least partially formed of a material comprising titanium ~~which~~ that may adsorb approximately 0.67 lbs. oxygen/lb. mat'l. The

reaction of the ambient air with the titanium will result in the production of TiO_2 within the oxygen-getting device 120. Another exemplary material ~~which~~ that may be used in the oxygen-getting device includes zirconium ~~which~~ that may adsorb approximately 0.175 lbs. oxygen/lb. mat'l. It is noted, however, that the above materials are exemplary and that other materials may be used as well as other means and methods of extracting oxygen as will be appreciated by those of ordinary skill in the art.

Please amend paragraph **[0046]** as follows:

[0046] Referring briefly to FIGS. 3A, 3B and 4 while still referring to FIGS. 1 and 2, it is shown how the operating temperature of the ~~oxygen getting~~ oxygen-getting device 120 may influence the performance of the ~~fire-suppression~~ fire suppression apparatus 100. FIG. 3A shows a first graph 200 depicting equilibrium reaction and aspirator relationships for an exemplary embodiment of a ~~fire-suppression~~ fire suppression apparatus 100 wherein iron (Fe) is used to react with air in an ~~oxygen getting device~~ oxygen-getting device 120. More particularly, a first plotline 202 shows the relationship of temperature (left hand, vertical axis 204) with respect to the "air-to-getter ratio" (horizontal axis ~~206)~~ 206), which is defined as the pound-mass (lbm) ratio of aspirated air to the iron material present in the oxygen-getting device 120 in an equilibrium reaction (*i.e.*, assuming complete reaction of the air with the iron material). A second plotline 208 shows the relationship of the air-to-getter ratio to the cross-sectional area of a given diffuser 118 (represented as a diffuser tube diameter in units of inches on the right hand, vertical axis 210). A third plotline 212 shows the relationship of the air-to-getter ratio with the mass flow ratio (also the right hand, vertical axis 210), which is the pound-mass ratio of aspirated air to combustion gas produced by the ~~gas generating~~ gas-generating device 110.

Please amend paragraph **[0047]** as follows:

[0047] Referring briefly to FIG. 3B, a second graph 214 is shown for an exemplary embodiment wherein copper is used to react with air in an ~~oxygen getting~~ oxygen-getting device 120. Again, the first plotline 202′ shows the relationship of temperature with the

air-to-getter ratio; the second plotline 208′ shows the relationship of the diffuser tube diameter with the air-to-getter ratio; and the third plotline 212′ shows the relationship of the mass flow ratio with the air-to-getter ratio.

Please amend paragraph **[0048]** as follows:

[0048] Referring now briefly to FIG. 4, a graph 220 includes three plotlines 222, 224 and 226 based on kinetic calculations of the percent oxygen removed from the aspirated air (left hand, vertical axis 228) for a stated temperature of the material present in the ~~oxygen getting~~ oxygen-getting device 120 (horizontal axis 230). For example, the first ~~plotline~~ plotline 222 shows such a relationship for ~~10lbm~~ 10 lbm of copper, the second plotline 224 shows a similar relationship for 15 lbm of copper, and the third ~~plotline~~ plotline 226 shows a similar relationship for 20 lbm of copper.

Please amend paragraph **[0049]** as follows:

[0049] Considering the graphs 200, 214 and 220 together as shown in FIGS. 3A, 3B and 4, it can be seen that such relationships may be used to assist in selecting an oxygen-getting material for use in an ~~oxygen getting~~ oxygen-getting device 120. The graphs 200, 214 and 220 also show the importance of flow path geometry, such as the size of the diffuser 118, in regards to aspiration performance.

Please amend paragraph **[0050]** as follows:

[0050] For example, after a material has been selected for use in the ~~oxygen getting~~ oxygen-getting device 120 based on information such as shown in FIG. 4, the further information provided in a corresponding graph (i.e., graph 214 in FIG. 3B) may be used to design other aspects of the ~~fire-suppression~~ fire suppression apparatus 100. Still using FIGS. 3B and 4 as an example, it is apparent that, when utilizing a copper material, the rate of oxygen removal from aspirated air increases as the temperature of the copper goes up. However, depending on the intended application and environment of the fire suppression apparatus 100, it may be desirable

to keep the effluent gas mixture below a specified temperature. The temperature of the effluent gas mixture may be controlled by keeping the temperature of the combustion gas at or below a specified level or, as previously discussed, by providing a heat transfer device 126 to reduce the temperature of the gas mixture prior to its exit from the ~~fire suppression~~ fire suppression apparatus 100. In either case, once the operating temperature of the ~~oxygen getting~~ oxygen-getting device 120 is established, the air-to-getter ratio may be determined and, subsequently, the mass flow ratio and the diffuser tube diameter may similarly be determined utilizing the graph 214 shown in FIG. 3B.

Please amend paragraph **[0051]** as follows:

[0051] Referring more particularly to FIGS. 1 and 2 again, after the ambient air has passed through the oxygen-getting device 120, the now oxygen-depleted (or oxygen-reduced) air is drawn further into the flow path 108 and is mixed and entrained with the gas exiting the nozzle 116 of the gas-generating device 110 as indicated at 108B. The gas mixture (i.e., the generated gas exiting the nozzle 116 combined with the oxygen-depleted air) flows through a diffuser 118 ~~which~~ that is configured to reduce the velocity of the gas mixture. The gas mixture flows through the diffuser 118 and through any subsequent processing apparatus placed in the flow path 108, as indicated at 108C, such as the second ~~oxygen getting~~ oxygen-getting device ~~122,~~ 123, the NO_X scavenging device 124, the heat transfer device 126, ~~a filter~~ filter 136 or some other processing or conditioning device such as, for example, a NH_3 scavenger, as may be desired, to further condition the gas mixture or alter the flow characteristics thereof.

Please amend paragraph **[0052]** as follows:

[0052] The gas mixture then exits the second set of openings 106, as indicated at 108D, at a reduced velocity. In some embodiments, it may be desirable to reduce the velocity of the gas mixture such that it exits the second set of openings 106 at a subsonic velocity. Additional components may be utilized within the ~~flow path~~ path 108 to control the velocity of the gas mixture. For example, as shown in FIG. 1, the flow path 108 may include one or more bends or

channels to redirect the flow of the gas mixture and reduce the velocity thereof. Additionally, baffles or other similar devices may be placed in the flow path 108 to control flow characteristics of the gas mixture. Additional ~~diffusers~~ diffusers 118 may also be utilized including, for example, at or adjacent the second set of openings 106 to further reduce the velocity of the gas mixture exiting the housing 102.

Please amend paragraph **[0054]** as follows:

[0054] Referring now to FIGS. 5 and 6, FIG. 5 shows a perspective of a defined environment 150 in which ~~a~~ one or more fire suppression ~~apparatus~~ apparatuses 100 of the present invention may be utilized, while FIG. 6 shows a schematic of a fire suppression system 152 ~~which~~ that may incorporate one or more of the fire suppression apparatuses 100 and may be used to service the above-stated environment 150.

Please amend paragraph **[0055]** as follows:

[0055] One or more of the fire suppression apparatuses 100 may be strategically located within the environment 150 to draw in air from the environment 150 and distribute a gas mixture, such as described hereinabove, back to the environment 150. The number of the fire suppression apparatuses 100 utilized and their specific location within the environment 150 may depend, for example, on the size of the environment 150 (e.g., the volume of air contained thereby), the intended use of the environment 150 (e.g., human-occupied, clean room, etc.), and/or the type of fire expected to be encountered within the environment 150.

Please amend paragraph **[0056]** as follows:

[0056] The fire suppression system 152 may include one or more sensors 154 such as, for example, smoke sensors, heat sensors, or sensors ~~which~~ that are configured to detect the presence of a particular type of gas. Th~~e system~~ system 152 may also include one or more actuators 156 ~~which~~ that may be manually triggered by an occupant of the environment 150 upon the occurrence of a fire. The sensors 154 and actuators 156 may be operably coupled with a

control unit ~~158, which~~ 158 that may include, for example, a dedicated control unit or a computer programmed to receive input from or otherwise monitor the status of the sensors 154 and actuators 156 and, upon the occurrence of a predetermined event, actuate the gas-generating device 110 (FIGS. 1 and 2) and initiate the operation of the fire suppression apparatuses 100.

Please amend paragraph **[0058]** as follows:

[0058] Referring now to FIGS. 7A and 7B, another embodiment of a fire suppression apparatus 100′ is shown. The fire suppression apparatus 100′ is constructed similarly to that which is shown and described with respect to FIGS. 1 and 2, except that the ~~apparatus~~ fire suppression apparatus 100′ is configured and located so as to be substantially integrated with a structure 170 associated with the environment being serviced or protected thereby. Thus, the structure 170 may be integral with the housing 102′ of the fire suppression apparatus 100′ wherein a first opening 104′ (or set of openings) is formed within a wall or panel 172 of the of the structure 170, a second opening 106′ (or set of openings) is formed within the wall 172 of the structure 170, and a flow path 108′ is defined between the first and second openings 104′ and ~~106′.~~ 106′, respectively.

Please amend paragraph **[0059]** as follows:

[0059] Various processing devices may be placed in the flow path 108′ including, for example, oxygen-getting devices, NO_X scavengers, filters and/or heat transfer devices such as described above. Additionally, various flow control ~~devices~~ devices, such as diffusers, baffles or redirected flow ~~paths~~ paths, may be incorporated into the fire suppression apparatus 100′ to control the flow of the gas mixture ~~which~~ that ultimately exits the second opening 106′.

Please amend paragraph **[0061]** as follows:

[0061] Referring briefly to FIG. 8, a partial cross-sectional view of a fire suppression apparatus 100″ is shown in accordance with another embodiment of the present invention. The fire suppression apparatus 100″ is similar to those described above but is configured to be

portable such that it may be actuated and quickly disposed within a selected environment. Thus, for example, a manually deployed actuator 180 may be configured to actuate any igniting device associated with the gas-generating device 110″. In operation, a user may deploy the actuator 180 by, for example, pulling a safety pin 182 and pressing a button or other mechanical device 184, thereby actuating an igniting device and combusting propellant contained within the gas-generating device 110″. A timer or other delay mechanism may also be incorporated with the ~~actuator~~ actuator 180 so that actuation of the associated igniting device and combustion of the propellant contained within the gas-generating device 110″ does not occur for a predetermined length of time. Such a delay mechanism may allow users to actuate the fire suppression apparatus 100″ and then distance themselves therefrom so as to avoid contact with the fire suppression apparatus 100″ in cases where the heat of the fire suppression apparatus 100″ or gases generated thereby may pose a threat when a user is in extremely close proximity therewith.